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New Economy: Explosive Growth Driven by a Productivity Revolution?*

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Abstract

The discussion paper discusses the macroeconomic argument of a New Economy that is characterized by higher non-inflationary economic growth due to increases in productivity caused by the digital revolution. Besides presenting evidence put forward by mainstream protagonists of the New Economy, it explores an interpretation of the New Economy inspired by regulation theory. Specifically, it looks at the stability of a finance-led regime of accumulation on the basis of the digital production paradigm. Some basic causal relationships of such a regime, especially the investment-profits, wealth-profits, and wealth-consumption connections, seem too fragile to be able to support the assertion that a stable new regime of accumulation has emerged. Furthermore, the New Economy thesis suffers from serious problems in measuring productivity in the service industries. Therefore, it seems just as plausible that the long "Clinton" expansion was a singular event made possible by the special position the U.S. enjoys in the world economy.

Zusammenfassung

Wie stimmig ist das makroökonomische Argument von einer New Economy: Ist höheres inflationsneutrales Wirtschaftswachstum aufgrund gestiegener, der digitalen Revolution geschuldeten Produktivitätszuwächse möglich geworden? Zur Beantwortung dieser Frage werden zunächst die von den Mainstream Befürwortern angeführten Belege präsentiert. So dann wird eine Interpretation aus regulationstheoretischer Perspektive versucht, wobei insbesondere die Stabilität eines finanzgetriebenes Wachstumsmodells auf der Basis eines digitalen Produktionsregimes ausgelotet wird. Einige fundamentale Kausalzusammenhänge eines solchen Modells, wie der Investitionen-Gewinn-Nexus, Vermögen-Gewinn-Nexus und Vermögen-Konsum-Nexus, sind zu fragil, um von einem neuen stabilen Akkumulationsregime sprechen zu können. Ferner steht der Kern der New-Economy-These, die informationstechnologisch bedingten Produktivitätszuwächse, noch auf unsicherem Datenfundament. Deshalb erscheint eine Interpretation des langanhaltenden Wirtschaftsaufschwunges in den USA als singuläres, durch die besondere Position der USA in der Weltwirtschaft begünstigtes Ereignis ebenso plausibel zu sein.

Contents

Introduction

The term "new economy" is as enigmatic as that of "modernism". My first encounter with the construct was in an essay by Kim Moody (1994/1997), in which he used "new economy" for labeling deregulation, lean production, and above all a workforce whose composition has shifted in ethnicity and gender. The term entered the mainstream at the heels of a speech made by the U.S. Federal Reserve Board Chairman, Alan Greenspan, before the U.S. Congress in July 1996 (Greenspan 1996). In this speech, Greenspan defended his position to forego interest rate hikes despite low unemployment by pointing to the high growth in productivity, which would prevent employment-induced price increases. He countered the assumption widely held since the 1980s that price stability is endangered when the unemployment rate falls under 6% (NAIRU = non-accelerating inflation rate of unemployment): Price stability could be maintained even at a far lower rate of joblessness. Greenspan argued that because this situation is new, it is warranted to speak of a new economy. The chief reason for the productivity gains is to be found not in tighter international competition but above all in advances within the realm of information technology:

> "Our nation has been experiencing a higher growth rate of productivity – output per hour worked – in recent years. The dramatic improvement in computing power and communication and information technology appear to have been a major force behind this beneficial trend" (Greenspan 1998)

The term "new economy" has many connotations (Ehrke 2000). Most commonly it refers to that branch of the economy that develops, produces, and applies Internet-based information technologies (the so-called Internet economy; see Zerdick et al. 1999). In the following discussion concerning theoretical perspectives on the new economy phenomenon, I orient myself on Greenspan's macroeconomic usage of the term. The main characteristic of the new economy is that high productivity growth (thanks to the new economy in a micro-economic sense) sustains high non-inflationary economic growth (cf. Bassanini et al. 2000). This article examines the validity of this theory.[1]

First, I present the evidence usually cited in support of Greenspan's theory of a new economy. Second, I outline the arguments of the skeptics who relativize the alleged productivity gains. Then I provide a theoretical explanation for Greenspan's theory that originates in a comfortable distance from the new economy lobbyists (e.g., the Clinton administration, the Federal Reserve Board, and Wall Street); namely, French regulation theory.[2] In conclusion, I discuss the problems associated with the empirical basis for such an interpretation and point to some developments that indicate the transient and singular nature of the recent extraordinarily long expansion of the U.S. economy.

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1 I deal only marginally with the employment-side of the sustained U.S. expansion. For a comprehensive, interdisciplinary analysis of the so-called job miracle, see Lang et al. (1999).

2 Seminal works of this French social theory include those by Michel Aglietta (1979, 2000), Robert Boyer (1990), and Alain Lipietz (1985). For an introduction to this work, see Boyer (2000a).

The Political Background of the New Economy

In Germany, the term "new economy" entered the political vocabulary simultaneously with "shareholder capitalism" – in the wake of discussions concerning the so-called American job miracle. Consequently, the term was seen as the battle cry of a triumphant capitalism (see the critique in Altvater and Mahnkopf 2000). It carries the same triumphal undertones in the United States, which overshadows the fact that the term was initially used in the 1996 election year to justify the growth-promoting interest rate policy of the Federal Reserve. After the Federal Reserve upped interest rates from 3% to 6% from early 1994 to the spring of 1995, President Clinton feared suffering a similar fate as that of his predecessor; namely, to fall victim to a slowdown in the economy caused not least by interest rate policy. In 1995 some economists and bankers allied with the Democratic Party (notably New York investment banker Felix Rohatyn [1995]) – but also a few industrialists – came out in favor of a change in interest rate policy (Woodward 2000: 150). Their argument that a higher, non-inflationary growth rate would be sustainable owing to the new communication technologies and the success of "lean management" was met with enthusiasm by President Clinton. But interest rate policy-making was the domain of the Federal Open Market Committee (FOMC), which was dominated by Chairman Alan Greenspan. This market-economy-oriented Republican, who under President Ford was president of the Council of Economic Advisors, astonished everyone by adopting the new economy argument. From mid-1995, the FOMC quickly cut the interest rate to 5¼ percent, where it remained for the entire 1996 election year. Thus Greenspan not only helped re-elect Bill Clinton, he also created the framework for America's poor to find jobs and income. Because, with a Republican majority in both houses of Congress, President Clinton had no chance of fighting poverty with a redistribution policy. Accelerated economic growth alone offered the prospect of helping the jobless among the traditional Democratic base. Thus it is hardly surprising that progressive economists like Barry Bluestone (1999) and Robert Eisner (1998) have euphorically embraced the new economy argument, whereas NAIRU followers like Robert Gordon have taken a more skeptical stance (see below).

The New Economy Theory

The gist of the new economy theory is that a higher, non-inflationary growth trend has emerged in recent years owing to higher productivity gains driven particularly by information technology. As Federal Reserve Chairman Alan Greenspan puts it:

> "It's certainly become increasingly difficult to deny that something profoundly different from typical post war business cycle has emerged in recent years. … Most remarkably, inflation has remained subdued in the face of labor markets tighter than we experienced in at least a generation… While there are various competing explanations …, the most compelling appears to be the extraordinary surge in technological innovation … In the early 1990s, …, those innovations began to offer sharply higher prospective returns on investment than had prevailed in earlier decades … By 1995, the investment boom had gathered momentum, suggesting that earlier expectations of elevated profitability had not been disappointed … Now, five years later, there can be little doubt that … the [productivity] growth rate has continued to rise with scant evidence that it is about to crest." (Greenspan 2000: 2)

Fig. 1: Real GDP Growth During Expansions
Percent change at annual rate

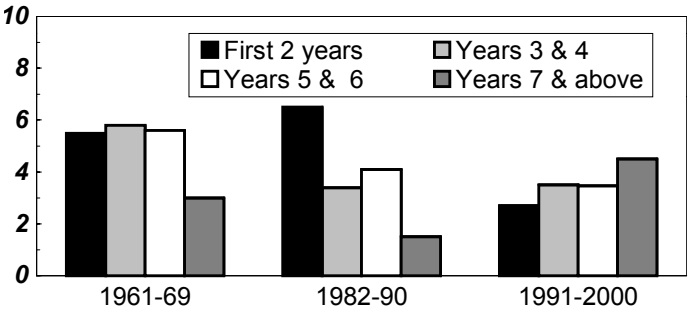


Fig. 2: Rate of Inflation During Expansions
Percent change at annual rate

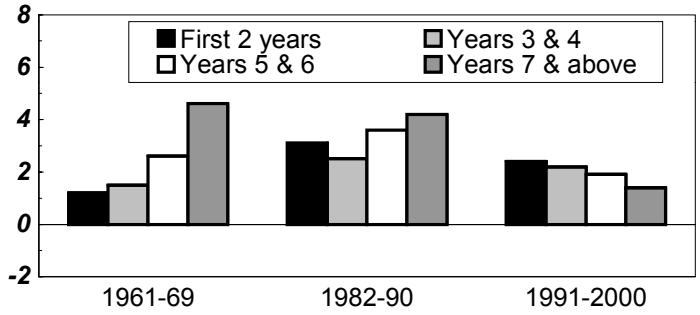


Fig. 3: Growth of Real Profits During Expansions
Percent change at annual rate

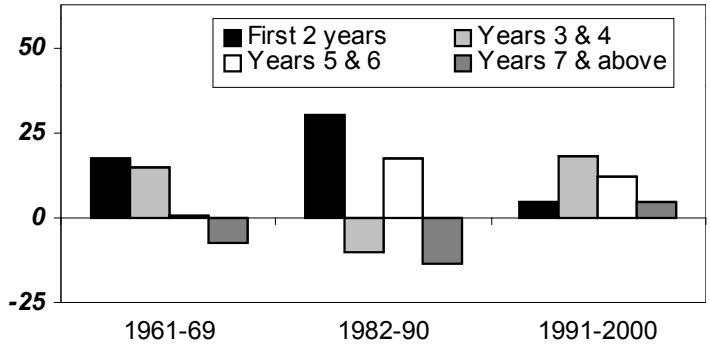
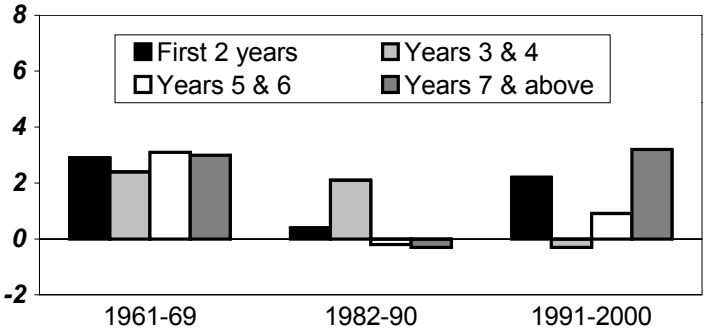


Fig. 4: Growth of Real Hourly Compensation During Expansions
Percent change at annual rate

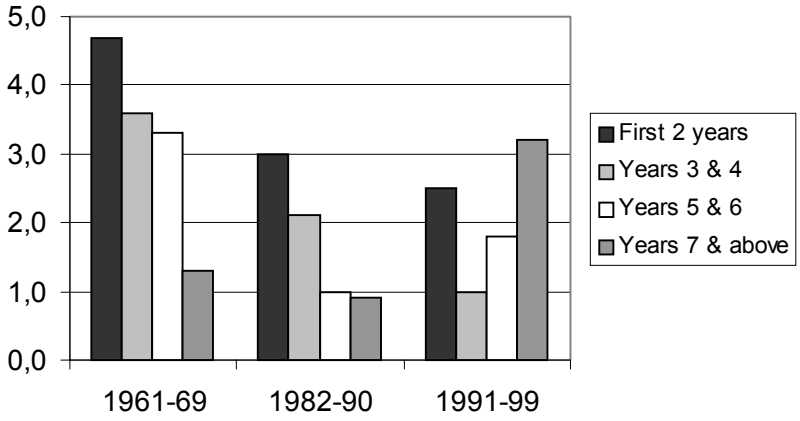


Source: DOC (2000: 62)

The theory was apparently substantiated by the unusual business cycle of the U.S. economy. As illustrated in Figures 1-4, the economic resurgence Clinton presided over in his fifth year in office is distinctive from previous ones in that productivity continued to rise, inflation fell, profits declined slightly, and real wages climbed.

One of the reasons for the extraordinary productivity bonanza in a late phase of cyclical upturn was the rapid growth of information technology investments, especially investments in data processing equipment. The ratio of the capital stock of computer hardware to hours worked rose an average of 16.3% per annum from 1991 to 1995, accelerating to 33.7% from 1996 to 1999. The use of software capital also surged, if not quite so dramatically. All other forms of capital stock, which account for 95% of the entire U.S. capital stock, exhibited in the 1990s an annual growth of a mere 0.5% (see figure 5).

Fig. 5: Growth in Nonfarm Business Sector Output per Hour During Expansions Percent change at annual rate



Source: DOC (2000: 33)

A study by Oliner and Sichel revealed that computer capital outlays from 1996 to 1999 contributed up to 24% of the general growth in labor productivity. This is all the more astounding when one considers that in 1998 computers accounted for less than 1% of total capital stock (Oliner/Sichel 1999/2000). On the whole, the increased use of IT capital (computers, software, and communication equipment) in the second half of the 1990s accounted for 48-74% (depending on the study) of the acceleration in productivity gains of 1.06 percentage points (DOC 2000: 38).

Barry Bluestone vividly and critically describes how the mainstream of U.S. economists have come to grips with this sustained economic revival. Inflation plays a key role in this explanation. If price rises are imminent, investors demand higher interest rates to compensate for the expected loss of purchasing power. By the same token, uncertainty about prospective inflation trends inhibits investment activities. Without knowledge about future prices, firms cannot adequately plan future levels of production. They will avoid making long-term investments for fear of generating excess capacities and inventories.

Bluestone summarized the individual components of the neoclassical growth model as a syllogism:

(A) Economic growth can only be accelerated by higher investments.
(B) Higher investments require lower interest rates.
(C) Lower interest rates require stable prices and increased savings.
(D) Only when inflationary trends are strictly under control and a high savings rate is achieved can economic growth be quickened.

Yet this line of reasoning leaves a key question unanswered; namely, that of demand. If production volume continually balloons due to new investments, but demand for additional goods and services is inadequate, then productivity gains would only increase unemployment and lead to an underutilization of production capacities.

This gap in the argument is filled in mainstream economic thinking by what Bluestone calls the "Wall Street Virtuous Cycle," which is based on the assumption that inflation fighting gives the impression of capital market stability, which itself is conducive to higher equity prices. These higher equity prices increase household wealth and encourage greater spending. In this manner demand is created for the additional production volumes stimulated by the new investments. Thus the growth curve reaches ever higher levels.

In retrospect – Bluestone wrote in 1999 – this model appears to have functioned precisely as expected. The Dow Jones 30 Industrials rose from less than 3,800 in 1994 to over 9,000 in the summer of 1998. This market strength increased household wealth by 12 trillion U.S. dollars within just four years. Yet only a very small portion of these gains was spent on goods and services. But even if this portion were no larger than 4%, annual consumer spending would rise by 120 billion U.S. dollars. Hence spending would increase by 2.1% annually. Again, in the words of Alan Greenspan:

> "... our economy is still enjoying a virtuous cycle, in which, in the context of subdued inflation and generally supportive credit conditions, rising equity values are providing impetus for spending and, in turn, the expansion of output, employment, and productivity-enhancing capital investment." (Greenspan 1998)

Bluestone's critique commences with the individual components of the neoclassical syllogism. His skepticism was borne out concerning the ever increasing equity prices in the 2000 stock market year. Nevertheless, Bluestone's interpretation of the unusual business cycle of the U.S. economy differs from the neoclassical explanation primarily in the emphasis he places on the contribution the IT revolution has made toward building up the confidence of private investors. In this respect he finds himself in league with Greenspan.

Despite the impressive boom of recent years, not all economists subscribe to the new economy theory. First, to some macroeconomists, the higher productivity gains are the consequence of high economic growth (Solow, quoted in Uchitelle 2000a) stemming from a growth-promoting monetary policy (see below).

Second, the recent reversal of the long-term productivity trend is either fully disputed or interpreted as a short-term anomaly. The rise in the average productivity rate of 2.15% per annum from the fourth quarter of 1995 to the first quarter of 1999 was, as Robert Gordon pointed out (1999a), still below the average growth rate of 2.63% in the interval from 1952 to 1972. However, over the course of 1999, the average rate of productivity

rose to 2.82% (from the fourth quarter of 1995 to the first quarter of 1999; Gordon 2000: Table 2).[3]

Surmounting the Computer Paradox?

To the skeptics, Robert Solow's dictum rings true: "You can see the computer age everywhere but in the productivity statistics" (1987: 36). Until recently, there was consensus among productivity experts that information technologies would give rise to a productivity paradox. These technologies have undergone breathtaking innovation in performance and manufacturing productivity, and since the early 1980s they have diffused like wildfire. Yet IT use has not left its mark in macroeconomic productivity statistics (Blinder/Quandt 1997). In 2000, leading productivity experts like Dale Jorgenson and Kevin Stiroh cautioned against jumping to conclusions:

> "The apparent combination of slow productivity growth and heavy computer-use [in specific service industries] remains an important obstacle for new economy proponents who argue that the use of information technology is fundamentally changing business practices and raising productivity throughout the U.S. economy." (Jorgenson/Stiroh 2000: 37)

Moreover, these authors find it implausible that the relatively small IT sector (see above) could engender productivity gains in the economy at large. According to Robert Gordon's calculations, high productivity growth is confined primarily to the IT sector; namely, 41.7% per annum from the fourth quarter of 1995 to the first quarter of 1999. The productivity growth rate for investment goods and durable goods excluding computers was only 1.8% for the same interval; it was a mere 1.5% for the large remainder of the economy (nonfarm, nondurables private business sector; Gordon 1999a: Table 1). Because this "remainder" invested heavily in computer technology, Gordon believes the productivity paradox remains intact but is by no means inexplicable. First, he contends that the invention of the computer and the Internet was far less significant than the milestone inventions of the second industrial revolution from 1860 to 1900 (electricity, internal combustion engine, communication media, etc.). The computer does not create new needs but rather is a slave to rationalization. Nevertheless, in many fields the computer cannot replace manpower, especially where personal contact is still important. The demand for computers increases only because of falling prices (constant demand curve). Even in the Internet age, this demand did not expand commensurate with the nose dive in prices. The computer revolution thus has only limited merit as an engine of macroeconomic growth (Gordon 2000: 24-28).

Second, Gordon is skeptical that the computer revolution can claim spillover effects. Outside the manufacturing industry, the Internet itself would make only a small contribution to productivity gains. Gordon gives five reasons for this:

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3 Productivity data published by the Bureau of Labor Statistics in September 2000, based on the revised National Income and Product Accounts, reveals an annual productivity growth rate of 2.5% in the private sector for the interval 1995 - 1998 (per manhour), and an increase of 3.3% for the interval 1948 - 1973 (BLS Multifactor Productivity Trends, 1998).

1. Internet use merely replaces other forms of entertainment and information gathering.
2. The Internet does not increase spending but comes solely at the expense of traditional sales methods. Thus investment in the Internet is the first line of market share defence.
3. Frequently the content of the Internet is not really new but has simply become more readily and cheaply accessible.
4. Many Websites duplicate rather than replace traditional forms of conveying information, so that costs often exceed sales.
5. Internet use takes place mostly during working hours at the expense of firms (Gordon 2000: 6).

Robert Gordon does not deny that in the 1990s the unemployment rate could be reduced without igniting inflation, thus paving the way for higher economic growth. However, in his eyes the NAIRU's decline was primarily fueled by the changed behavior of prices for foodstuffs and energy as well as plunging import prices *vis-à-vis* the previous decade. Only in second place does Gordon cite plummeting computer prices, a slowdown of price rises in the healthcare sector (thanks to cuts in fringe benefits), and a modified measure of price inflation (Gordon 1999b).

The New Economy from a Regulation Theory Perspective

The new economy theory is not only promulgated by interested parties, be it the Clinton administration or investment banks on Wall Street, but has proponents among economic historians like Paul David and social theorists in the Neomarxist tradition like Manuel Castells,[4] and – though rather implicitly – by prominent authors of the French regulation school (Aglietta 2000; Boyer 2000b).

The latter group resolves the IT productivity paradox by making a case for a presently emerging "new production paradigm". Their argument goes as follows. Production based on technologies powered by cheap energy is being supplanted by a production paradigm based on cheap information. This shift has come about through the IT revolution. The common denominator underlying the most diverse technological innovations of the last few decades is a common digital language for acquiring, saving, and transmitting information. The digitalization of information facilitates the possibilities of exchange between separate branches of research, thus accelerating knowledge dissemination. Nevertheless, the rewards of technological development cannot be immediately reaped at the macroeconomic level. Analogous to technological advances in the past (e.g., invention and diffusion of the electric motor; David/Wright 1999), a long learning phase for each new technology is to be expected. The breakthrough for the widespread application of electronic data processing happened in 1971 with the invention of the microprocessor. Its utilization nonetheless was accompanied by high training costs and necessitated an overhaul of the organizational structure. Michael Kiley estimates that

4 Manuel Castells's definition of the new economy places more emphasis on its production side than on its macroeconomic dimension. To him, the new economy is "informational, global, and networked".

these adjustment costs have lowered measured growth in multifactor productivity since 1974 by about ½ percentage point (Kiley 1999). Studies on the introduction of electronic data processing in businesses showed that productivity gains were made only when the business had previously undergone the appropriate restructuring (Brynjolfsson/ Hitt 1998; Black/Lynch 1999). Optimal use of the computer first came about with the introduction of the Internet (Castells 2000: 51-53). One's personal experience with computer use in academia should readily confirm this argument.

The fact that electronic data processing only realizes its full potential over time is just one factor behind the unexpectedly disappointing productivity trend in the 1980s. The replacement of the old paradigm with the new is arguably of greater importance. If one follows regulation theory in the assumption that the productivity reserves of the old paradigm were exhausted by the mid-1970s at the latest (Aglietta 1979: 119-121), then the low productivity gains in the 1980s and early 1990s were practically inevitable. Because as long as the new paradigm was implemented in only a few sectors and the hoped-for effect was evident in still fewer sectors, then the declining efficiency of the old regime would affect the macroeconomic productivity trend (David 1999: 29).

Yet regulation theory states that a new production paradigm cannot realize its full potential as long as it is not incorporated in a compatible regime of accumulation regime and a suitable mode of regulation (Aglietta 1979). In the following – by way of a thought experiment – I outline a model for a new economy accumulation regime that is based on the information technology production paradigm and borrows from Robert Boyer's draft of an ideal prototype of a "finance-led" growth model (2000b). This model will be illustrated using examples from the United States.

Contrary to the Fordist accumulation regime, where investments are driven primarily by spending, in the new economy they would be spurred by the expected gains in efficiency as well as innovation and monopoly rents from utilizing technological innovations. First, sufficient consumer demand is secured by the job-creating multiplier effects of investments. Second, in contrast to Fordism, the level of real wages would be maintained, not by adjusting nominal wages to productivity growth, but rather primarily by implementing price cuts. In the pre-Fordist period, such a strategy hindered the integration of workers in the capitalistic world of consumption. Before the Great Depression, it mattered little how low the prices were for key consumer products such as the automobile and the family home. Absolutely they remained so expensive that workers could not finance them out of their earnings. Workers had moreover little chance of obtaining loans due to their uncertain income. Today in the OECD countries, social security is still quite extensive despite the restructuring of the welfare state, so that comparatively speaking the income flows of workers are constant (with the exception of those affected by the U.S. welfare reform; Piven 1999, Hay 2001). This is one reason why loans (and credit cards) are easily available to most workers. Furthermore, imports from countries with a much lower wage level put a cap on prices for basic consumer goods, which has important implications for satisfying the consumer needs of workers in the lower wage brackets. Nevertheless, high productivity gains do allow non-inflationary nominal wage increases, as was evidenced over the last three years in the United States (see Figure 4; from 1995 to 1998, real hourly wages rose by an average of 1.9% per annum, with the lower wage brackets exhibiting markedly higher gains, attributable in part to an increase in the minimum wage; Mishel et al. 2000: 115, 124). Third, profit-induced gains in

wealth create a climate conducive to spending. Rising property and equity prices would encourage higher consumer spending (comparable with the argument made in the *Wall Street Virtuous Cycle;* see above).

The wage relation in the new economy would be largely regulated by market forces. Given a state-prescribed minimum wage level and social security benefits, the price and quantity of manpower would be adjusted to supply and demand. The resultant greater income inequality would stimulate employment. Low wages would allow less productive economic activities to be sustained and enable better paid workers to avail themselves of housekeeping services on the market (Häußermann 1999). For these reasons, a lull in demand is unlikely despite rising income disparities. Furthermore, an ever greater portion of remuneration is profit based, be it in the form of bonus payments or stock options. In addition, provisions for retirement pensions are increasingly capitalized, either as private pension plans or as company pension funds, which can invest their monies in capital markets. Workers therefore have a stake in the profits and in the concomitant asset price increases. Because investments are greatly contingent on profits in this model, through wage restraint workers can favorably influence profits and hence employment level and at the same time improve their net asset position (Boyer 2000b: 124). They would also have a direct incentive to work more productively.

Extensively deregulated, globalized markets would offer a guarantee against inflationary trends and lead to a rapid, innovation-boosting re-allocation of resources. Capital markets in particular would react quicker to the new demand, thereby stimulating innovation and preventing structural conservatism. Instead of self-financing and bank loans, listed stocks and venture capital would be the dominant financing methods. This would have the added advantage of stabilizing demand, because rising equity prices lead to higher consumer spending. Monetary policy alone would, as in Fordism, remain in the hands of the state, at least in the leading industrial countries.

Uncertain Causalities in the New Economy Model

Akin to the neoclassical syllogism, this new economy model inspired by regulation theory seems at first glance to be able to plausibly explain the dynamic economic growth of the United States in recent years. A regulation theoretical interpretation, however, also implies probing for frictions among the various forms of regulation. Michel Aglietta (2000) and Robert Boyer (2000b) have expressed grave skepticism about the models stability because of the highly cyclical nature of the financial dynamic. In the following, I will probe the assumed causality in three relationships of the new economy model.

The *investment-profit nexus:* The model assumes that investments in machinery and equipment for the new production paradigm would increase both productivity and profits. Productivity gains allow higher economic growth and the prospects of profit spur investment. However, the realization of these expected profits cannot always be assured for a number of reasons. First, as its name suggests, the new economy moves at the fore of technological innovation. Thus the success of a given technology is shrouded in uncertainty. Investment failure is almost inevitable (Leonhardt 2000). Additionally, there is a systematic reason why bad investments can take on vast proportions in the new economy production paradigm. Since the new production paradigm is characterized not least

by network externalities, firms are tempted by extra profits to set the standard in their respective network. The struggle for network control will lead to over investment. A classic case represent the rail roads in the late 19th century. In trying to build the most comprehensive network, they laid ultimately unsustainable parallel tracks (a striking current example is the telecommunications industry). Because ultimately only a few firms can win, the losers in an industry shake-out will not see a return on their investments unless the winners buy up their equipment and client database. Furthermore, high expectations of profit can prompt owners of resources that are strategic for exploiting network effects to siphon off profits not yet realized (example: the state auctions of the UMTS licenses in the cellular phone industry). Second, one drawback of the IT revolution is that it facilitates the imitation of innovations (Leonhardt 2000). Although imitation leads to a more rapid distribution of productivity effects and is thus desirable for the economy at large, it diminishes pioneer rents. Third, the model's inflation-fighting exchange rate policy can have a negative impact on profits, as the appreciation of the home currency cheapens the products of the foreign competition, not just basic products but complex ones as well (the traditional trade surplus in high-tech goods is expected to vanish for 2000; Lenz 2000: 5-2). The goal of price stability can thus run counter to profit targets. Given the interaction of these three factors, if profit expectations were not realized after a certain amount of time, then an investment slowdown would occur in this model. Hence a slump could not be ruled out. Considering the importance of asset price increases in this model, even a cyclical amplification effect might result.

The *wealth-profit nexus:* The new economy model presumes that market valuation of productive capital is closely related to the profit expectations of firms. Rising profits would lead to rising share values on the stock exchange and thus to capital gains among investors. This might hold true in the long term, but as countless studies have showed, the promise of market profits, not just dividends, is one of the major incentives to participate in the stock market. Thus every investment decision entails an estimation not only of one's own profit chances but also of the prospects of the other market participants. Rational decisions of the individual can turn into irrational behavior of the masses (for more on stock market fever – or, in Greenspan's words, "irrational exuberance" – in recent years, see Shiller 2000). Such stock exchange speculation in the era of global capital markets can be augmented by exchange rate speculation. For foreign investors, the profitability of an investment object in relation to exchange rate fluctuations can be negligible (in search of safe investment opportunities following the devaluation of the Yen in 1995 and the Asian crisis, foreign investors thronged the U.S. stock exchange, buying about 30% of all stocks in the first half of 2000; Brenner 2000: 28). All in all, for systematic reasons cyclical fluctuations of market valuations have to be reckoned with, which in the event of a bear market can have a negative effect on the wealth-consumption nexus.

The *wealth-consumption nexus:* The hypothesis that capital gains stimulate consumer spending also is founded upon many presuppositions. In his presentation of the neoclassical growth syllogism, Bluestone points out that rising equity prices do not create real income flows but merely enhance share values. Rather, rising equity prices would mostly have just psychological effects on the durable goods sector. Significant psychological effects come into play only when equity prices skyrocket and further increases are seen to be likely. Moreover, capital is disproportionately in the hands of the richest

households, which tend to have a very high savings rate. An increase in the level of spending would therefore require an explosive and continuous rise in equity prices (1999: 34).[5] The investment-profit nexus discussed above challenges such rises, even given a functioning wealth-profit nexus.

The contingencies of these three nexuses increase the likelihood of cyclical fluctuations in the new economy model. Indeed, in 2000 all three of these linkages malfunctioned. In the investment-profit nexus, the "dot.com" firms along with a wide spectrum of listed businesses disappointed the profit expectations of financial analysts (for Standard & Poor's 500 businesses, profit expectations for the fourth quarter of 2000 had to be reduced from 15.4% to 4.2%; Fuerbringer 2001). In the wealth-profit nexus, equity prices went into a free fall (from September until late December the index of the technology exchange NASDAQ fell by 45%). The ensuing depreciation put a brake on consumer spending, particularly in wealthier households (Uchitelle 2000b).

This cyclical decline was triggered in part by interest rate increases by the Federal Reserve beginning in mid-1999. The interest rate was raised to 6.5% in the face of new risks of inflation presented by rapid economic growth exceeding productivity gains on the one hand and limited elasticity of the raw materials markets on the other (FRB 1999; oil prices doubled from mid-1999 to mid-2000, BOC 2000). These developments indicate that, due to the "irrational exuberance" of stock exchanges, the risk of cyclical overheating has not been eradicated in the new economy. Furthermore, in spite of the IT revolution, the new economy revealed that it too is dependent on the cheap supply of raw materials.

Business cycles however do not challenge the basic validity of a growth model; they attracted attention even in the "golden" years of Fordism. The real question is whether the growth model possesses automatic or at least discretionary stabilizers. In Robert Boyer's finance-led growth model, the Federal Reserve functions as controller; in addition to fighting inflation it must stabilize stock exchange prices through interest rate policy and supply of liquidity (2000b: 131f.). In the growth model presented here based on a new production paradigm, the Federal Reserve is assigned the additional task of stabilizing investment volume. In the event of extensive investment failures, the Federal Reserve would have to lower interest rates in order to provide wary investors with an incentive to take additional investment risks. In a slump, the Federal Reserve would also have to counteract deflationary trends that threaten to develop due to the lack of a collective wage agreement linking nominal wages to productivity gains.

Thin Empirical Basis for Evaluating the New Economy Theory

Yet the central assumption of the regulation theoretical interpretation of the new economy – high productivity by virtue of a new production paradigm – is built upon dubious empirical foundations. As already mentioned, official statistics disclose no significantly accelerated growth outside the information technology industries. A study by the De-

5 Karen E. Dynan and Dean M. Maki (2001) from the Federal Reserve Board have estimated that "an additional dollar of wealth leads households with moderate securities holdings to increase consumption between 5 cents and 15 cents, with the most likely gain in the lower part of this range."

partment of Commerce showed that in the IT-intensive service sectors, labor productivity even declined by 0.3% between 1990 and 1997 (DOC 2000: 39f). According to renowned journalist Bob Woodward, these data were known to Alan Greenspan when he formulated the new economy theory. Because of an anomaly in the relation between the inflation rate and profit trends, Greenspan concluded that the official statistics underreported productivity trends. In 1994 and 1995, business profits soared while inflation and wages remained constant. This difference could only be explained by increased productivity (Woodward 2000: 173).

The informational value of the official statistics is indeed limited. The service sectors now make up well over half of the gross domestic product of the United States. Yet there is still no universally accepted method for measuring productivity in the service sectors. And well over half of all services are categorized as hard to measure. These include education, healthcare, and the broad FIRE sector (financial services, insurance, and real estate; Griliches 1995). If the official statistics were to take sales as output measure, then in the hypothetical example of lower insurance rates, declining productivity would be assumed even though the rate reduction might be due to increased managerial productivity. For this reason, the U.S. Bureau of Economic Analysis takes hours worked as output measure for most of these sectors. However, this leads to productivity growth largely being equated with wage increases (Dean 1999).[6] In addition, the utilization of information technology can enhance the efficiency of unpaid rather than paid labor (e.g., faster research possibilities for library users), which is not reflected in the output figures (Huws 2000: 655).

In October 1999, the Bureau of Labor Statistics adopted a new method for measuring productivity in the banking industry that takes transactions as output measure. As a result, high gains in labor productivity were disclosed. Nevertheless, this calls attention to the weighting of the disparate transactions, which range from account entries to complex consultancy services (DOC 2000: 69).

At the instance of Alan Greenspan, a multiplicity of studies have investigated the problem of productivity measurement in individual service industries. They verified that measurement errors led to an underestimation of real productivity trends. Yet there is no consensus regarding the extent of underestimation (Dean 1999).

The measurement of productivity in the manufacturing sector is also problematic because of the inherent difficulty of relating a physical entity (labor hour) to a monetary entity (value added). For example, neither the utility of rapid product innovation (which retards productivity due to lower returns to scale) nor product improvement is adequately taken into account. Nevertheless, any attempt to measure qualitative improvement is prone to arbitrariness. The Bureau of Economic Analysis developed a "hedonic" price index for the computer and semiconductor industries that reflects changes in the

6 "BEA [Bureau of Economic Analysis, Dept. of Commerce] estimates the real GPO [Gross Product] of [water transportation, transportation services, depository institutions, nondepository institutions, holding and investment offices] by 'extrapolation' based on 'BEA persons engaged in production' and the GPO of [business services, insurance agents, legal services, motion pictures, and health services] based on 'BLS [Bureau of Labor Statistics, Dept. of Labor] employment weighted by Census Bureau receipts.' BEA uses separate deflators for outputs and inputs ('double deflation') for the remaining four industries." (DOC 2000: 40)

price-performance ratio. But while in the computer industry high computing speed is a factor in determining labor productivity, in the automobile industry the maximum speed of the manufactured automobiles is not taken into consideration. The development of a "hedonic" price index thus runs the risk of being hijacked by special interests. Interestingly, the price index for the computer industry was developed jointly with a team from IBM (Cole et al. 1986).

Whether productivity advances determined by firm-level analyses in the auto and steel industries can really be attributed to IT use is still unresolved. The significant edge in productivity enjoyed by Japanese producers in the 1980s did not rest on a higher share of information technologies (unless one counts the index-card-based Kanban system) but on the now universally known principles of lean production and high levels of capacity utilization (Jürgens et al. 1989; Scherrer 1992). Seen from this perspective, the positive productivity trend of the old economy came about by imitating Japan's technology on the one hand and, thanks to the favorable macroeconomic climate, its higher capacity utilization rates on the other. It is worth noting that 30% of the automobiles produced in the United States today are overseen by Japanese managers.

In light of these measurement problems, the U.S. Department of Commerce's study "Digital Economy 2000," despite an overall positive assessment of the new economy theory, came to the cautious estimate:

> "In the absence of more accurate measures of output for IT-intensive services industries, we cannot rule out the possibility that IT has made a very modest contribution to labor productivity outside the IT producing sector itself." (DOC 2000: 69)

The critique of the new economy theory stands however on the same weak empirical foundation. Robert Gordon's attempt to empirically disprove this theory is based on official productivity statistics plagued with measurement errors. Furthermore, his approach to disproving the theory of a spillover effect is unconvincing. In his regression analysis of the interval 1994 to 1999, Gordon employs a cyclical effect beyond the previous trend to explain the productivity gains in the private sector including the computer industry. Yet the trend alone is sufficient for explaining productivity growth in the private sector excluding the computer industry. Gordon concludes therefore that the use of computers outside the computer industry would not have led to any productivity gains surpassing the trend (Gordon 2000: 16). Irrespective of the problems in measuring productivity growth, Gordon's inference is questionable in so far as it is unknown whether the so-called trend in the examined time interval would have been sustained without the use of computers. Moreover, the data are likewise incomplete as regards the geographical and sectoral distribution of computer investments (Haltiwanger/Jarmin 2000: 7).

Nevertheless, the productivity decline in the first quarter of 2001 (seasonally adjusted annual rate of -0.1 percent in the nonfarm business sector, BLS 2001) at a time of slow growth suggests that the previous productivity increases can be largely explained by strong output growth.

Alternative Macro-Explanation: Externally Financed Consumer Boom

In view of the thin empirical basis of the new economy theory, alternative explanations are equally plausible. Robert Brenner (2000) acknowledges the significance of productivity gains but assigns a central position to marked profit increases. Trevor Evans puts forward the theory of growth-oriented monetary policy (2001). This states that U.S. monetary policy has behaved anti-cyclically since the mid-1980s with but a brief interruption. European monetary policy, by contrast, was not only more restrictive but also pro-cyclical. Accompanied by a pro-cyclically biased fiscal policy, European monetary policy would have led to a markedly higher interest rate level and hence to a higher jobless rate (cf. Palley 1999, Flassbeck 2000).

I find Evans's argument to be very convincing and have nothing to add apart from a few thoughts concerning the extent to which U.S. monetary policy of the 1990s may be generalized. Prior to the introduction of the Euro, the more restrictive policy in Europe was primarily a consequence of the globalization of economic activities. National currencies competed against each other for the funds of international wealth holder; lower real interest rates would have been penalized by monies/capital being withdrawn (Herr/Voy 1989). Conversely, the United States' liberal monetary policy benefited from the globalization of goods and capital markets. The extensively liberalized trade kept inflation under control, specifically by a reduction in import prices (6.4% per annum from the third quarter of 1995 to the first quarter of 1999; 70% of the decline was effectuated by non-oil commodities; Rich/Rissmiller 2000: footnote 7), by competitive pressure, and by the provision of additional production capacities to prevent shortages (an argument shared by Greenspan [2000]). The low inflation rate gave the Federal Reserve leeway for interest rate policymaking to promote growth. The downside of opening the home market was expanding trade deficits, which for 2000 are estimated at over 450 billion dollars, making up 4% of GNP (Bureau of Economic Analysis/U.S. Census, January 2, 2001). These inflation-dampening trade deficits are financed by liberalized capital markets. In the first quarter of 2000, "overseas" financed 4% of the United States' GNP (Peach/Steindel 2000: 3).

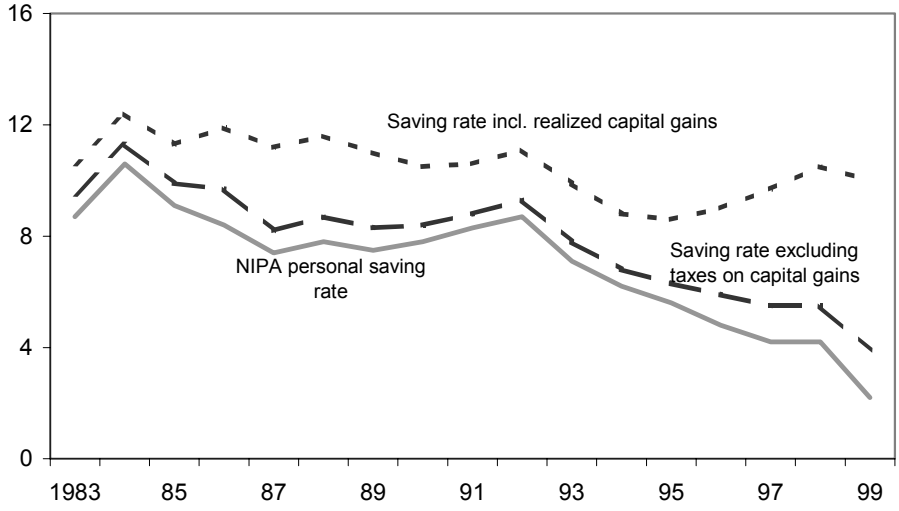
This willingness of foreign wealth holders to finance the American boom is a major reason for why that boom may be termed an American phenomena (cf. Boyer 2000b: 143). No other country with all its economic actors enjoys such a high degree of trust among international wealth holders in its debt-paying ability as does the United States. Despite the herd mentality of capital market players, there are also objective reasons for this: there is no need to raise foreign currency (the economic actors of the United States are indebted in their own currency) and the size of the American market promises high liquidity (and, in case of need, a quick market exit). Yet, as the past has showed, this trust is not boundless. The years 1971-1973, 1979, and 1985 bore witness to massive capital outflows, which caused a drastic devaluation of the dollar (Scherrer 1999: 185-234). For this reason, American monetary and currency policymakers were disquieted about the rising current account deficits, their faith in the new economy notwithstanding. A flight of international capitalists out of the dollar and the dollar's concomitant depreciation would cause rapid import price hikes, accelerate currency devaluation, and

raise calls for a hard line in interest rate policy: The downturn would arrive (Bergsten 2000).

There would be fewer grounds for worry if the foreign debt were indeed counteracted by explosive investment activity. Seen historically, the investment rate of recent years is not very high (16.1% of GNP in 1998 *vis-à-vis* 16.7% in 1980) and is below the European rate (18.5% in 1998; Pitz 2000: chart 4). Interestingly, after the U.S. national accounts reclassified software expenditures as an investment good in 1999, the investment rate rose dramatically that year – by 149 billion dollars (DOC 2000: 67). The increased investments are moreover offset by higher rates of depreciation. In the 1960s, the gross domestic product (GDP) and the net domestic product (GDP less depreciation; NDP) rose in sync by 4.4% per annum. In 1999 the GDP increased by 4.1%, while the NDP rose by merely 3.6% (ibid.). Since the investment volume had not risen *vis-à-vis* the 1980s, foreign countries probably financed consumption rather than investments in recent years.

The theory of a consumption-driven expansion in spite of high investments in IT cannot be dismissed, especially considering that the savings rate of private households has dropped drastically. In August 2000 the savings rate hit a record low of –0.4% (Pitz 2000: 5). Richard Peach and Charles Steindel calculated that, if realized capital gains and the taxes thereon were taken into account, the 1999 savings rate would be 7.25 percentage points higher. But they admit that the bulk of these gains would be reaped by just a handful of households (Peach/Steindel 2000; see figure 6). These imagined scenarios were nonetheless of little use in 2000, when on average the stock market generated no capital gains. In the instance of an economic downturn, not even the American government, which "saved" an astonishing 5.1% of the GNP in 1999 (ibid. 3), will be able to compensate for the lack of household savings. Consequently, one would expect rising dependence on foreign investors, which financed about 4% of the GNP in 1999 (ibid.). According to Robert Brenner, such dependence places the Federal Reserve in a policymaking quandary. Lowering interest rates would sustain expansion, but raising them would ensure future foreign capital flows (Brenner 2000: 43). At present, the Fed-

Fig. 6: Adjusted Personal Savings Rate 1983-1999



Source: Peach/Steindel (2000: 4)

eral Reserve under Greenspan seems to hope that interest rate cuts will stimulate the stock market and the United States will therefore remain attractive to investors. The proposed tax cut by President George Bush should also help to achieve this goal. But whether this calculation will bear fruit in the long run depends not least on future business profits, which in turn are affected by future productivity gains (Board of Governors 2001).

The New Economy Awaits Its Real Test

In light of the impressive U.S. business cycle of recent years, the theory of a new economy, which makes non-inflationary high growth possible thanks to high productivity gains, is winning plausibility. Explanations for this can be found in mainstream economic theory as well as in regulation theory. However, some basic causal relationships of such a regime, especially the investment-profits, wealth-profits, and wealth-consumption connections, seem too fragile to be able to support the assertion that a stable new regime of accumulation has emerged. In particular, it cannot be safely assumed that outlays in machinery and equipment for the new production paradigm increase both productivity and profits. For systematic reasons market valuations do not always reflect profitability. In a wealth driven consumption world, an increase in the level of spending would require an explosive and – most unrealistically – a continuous rise in equity prices. Moreover, the heart of the new economy theory – IT-related productivity gains – is founded on controversial data. A large portion of economic activities, especially services, is hard to measure. And even in the IT-producing sphere, a scientifically contentious "hedonic" price index is the prerequisite for statistically proving high productivity growth. Furthermore, the previous official growth statistics are lower than that of the "golden" era, the 1960s.

In view of this lasting doubt at the heart of the new economy principle, the theory of the specific globalization form of the U.S. economy appears just as plausible. According to this theory, globalization in the form of extensively liberalized trade in goods keeps inflation under control. The liberalized financial markets on their part make funds available for investments and for inflation-curbing current account deficits. Herein lies the uniqueness of the American boom, as no other country enjoys such a high level of trust on the part of international wealth holders in its debt-paying ability. Yet this trust has its limits. Consistent with this theory, a flight of international capitalists out of the dollar and the dollar's concomitant devaluation would give rise to restrictive interest rate policy measures.

I am currently at a loss to decide whether the new economy is indeed a new accumulation regime or merely a pompous construct for what is really a short-term trend. The only thing that appears certain is that the American boom of recent years has benefited decisively from exogenous conditions and therefore resists generalization. Future research should not only aim at better statistical measurement of productivity trends but also at improved analytical and empirical means to differentiate the effects of a possible new economy from those of specific globalization forms of the U.S. economy. The current probation period of the new economy in the light of sagging business profits and high current account deficits could soon deliver valuable empirical data for this research.

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